

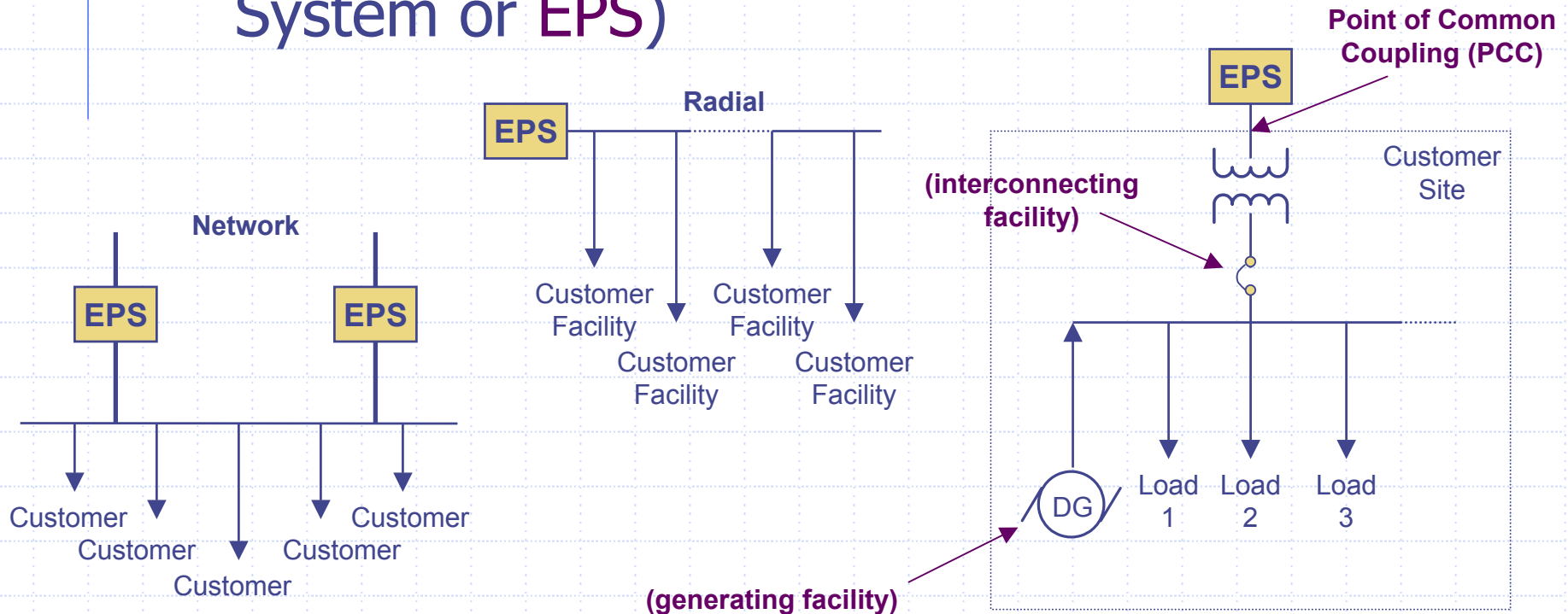
# **Massachusetts DTE DG Interconnection Collaborative**

## **Collaborative Results**

**Restructuring Roundtable  
March 28, 2003**

# What Is An Interconnect (Nomenclature)?

- ◆ The interface between Distributed Generation (DG) equipment, (the Facility) and the grid (the area Electrical Power System or EPS)



# Collaborative Effort Has Resulted in the Creation of Four Processes

## ◆ Simplified - Radial

- Simplest process
- Minimal or no costs expected
- Shortest time

## ◆ Simplified – Network

- Still reasonably simple
- Strict limits
- Modest fees, longer time interval

## ◆ Expedited – Radial

- Standardized process
- Screens / Supplemental Review technical approach
- Moderate fees , longer time interval

## ◆ Standard – Radial or Network

- Standardized process
- Similar to current process
- Essentially based on actual costs
- Potentially long time interval

## A large blue letter 'C' is positioned on the top line of a handwriting practice grid. The letter is formed by a single stroke that starts at the top line, curves to the right, and then back down to the top line, creating a semi-circle. The letter is centered horizontally on the page.

- ◆ One sheet application and approval
- ◆ Only three technical screens
  - Radial distribution systems only
  - Limited to 10kW or less
  - Inverter-based, UL1741 listed
- ◆ Minimal or no costs expected
- ◆ 15 business days max

### Simplified Process Interconnection Application

**Contact Information**

Legal Name and address of Customer applicant (or: For Individual: Individual's Name)  
 Company Name \_\_\_\_\_ CONTACT Person \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Telephone (Daytime) \_\_\_\_\_ (Evening) \_\_\_\_\_  
 Facsimile Number \_\_\_\_\_ E-Mail Address \_\_\_\_\_

**Alternative Contact Information (if different from Applicant)**  
 Name \_\_\_\_\_  
 Mailing Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_  
 Telephone (Daytime) \_\_\_\_\_ (Evening) \_\_\_\_\_  
 Facsimile Number \_\_\_\_\_ E-Mail Address \_\_\_\_\_

Ownership (include % ownership by any electric utility)

**Confidentiality Statement:** I agree to share information regarding the processing of my application (including name and address) to be received by the Massachusetts EX Collaborative that is exempting me to further expedite future interconnection. Yes \_\_\_\_\_ No \_\_\_\_\_

**Generating Facility Information**

Location (if different from above) \_\_\_\_\_

Electric Service Company \_\_\_\_\_ Account Number (if available) \_\_\_\_\_

Type of Generating Unit \_\_\_\_\_ Synchronous \_\_\_\_\_ Induction \_\_\_\_\_ Inverter \_\_\_\_\_

Manufacturer \_\_\_\_\_ Model \_\_\_\_\_

Nameplate Rating \_\_\_\_\_ MW (kW) \_\_\_\_\_ (MW) \_\_\_\_\_ Single \_\_\_\_\_ or Three \_\_\_\_\_ Phase

Prime Mover: Fuel Cell \_\_\_\_\_ Recip Engine \_\_\_\_\_ Gas Turb \_\_\_\_\_ Steam Turb \_\_\_\_\_ Microturbine \_\_\_\_\_ Pico \_\_\_\_\_ Other \_\_\_\_\_

Energy Storage: Solar \_\_\_\_\_ Wind \_\_\_\_\_ Hydro \_\_\_\_\_ Diesel \_\_\_\_\_ Fuel Cell \_\_\_\_\_ Other \_\_\_\_\_

ULTIM Load? Yes \_\_\_\_\_ No \_\_\_\_\_ Need an air quality permit from DEP? Yes \_\_\_\_\_ No \_\_\_\_\_ Not Sure \_\_\_\_\_

Planning to Export Power? Yes \_\_\_\_\_ No \_\_\_\_\_ A Cogenation Facility? Yes \_\_\_\_\_ No \_\_\_\_\_

Substation/Export Power Facilities \_\_\_\_\_  
 Equipment: Synchronous Purchased \_\_\_\_\_ Not Purchased \_\_\_\_\_ Not Relevant \_\_\_\_\_ Other \_\_\_\_\_  
 Est. Initial Cost \_\_\_\_\_ Not in Service Cost \_\_\_\_\_ Agreement reached by \_\_\_\_\_

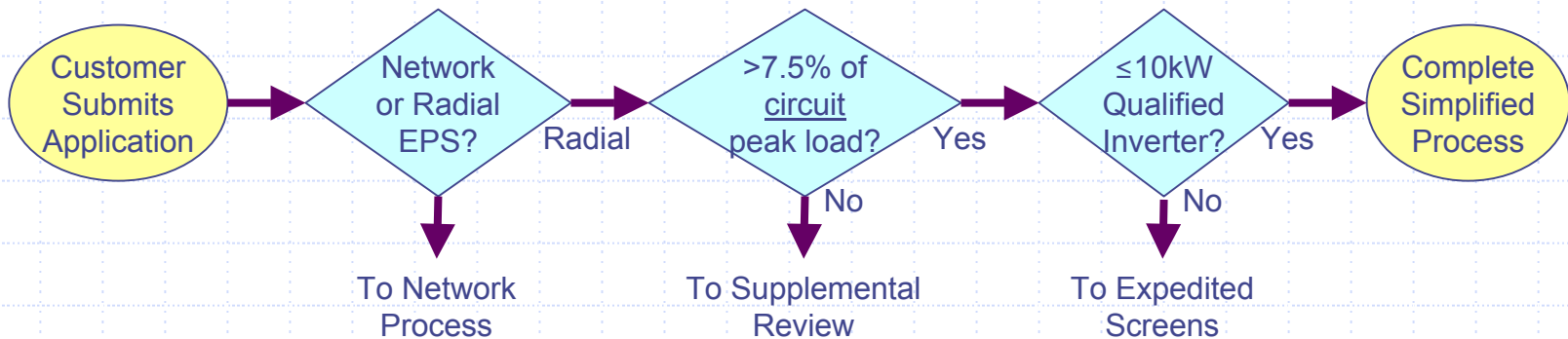
**Application Process (enter applicant's contact person in the name, not name)**

I hereby certify that to the best of my knowledge, all of the information provided in this application is true.  
 Applicant Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

The information provided in this application is complete.  
 Company Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

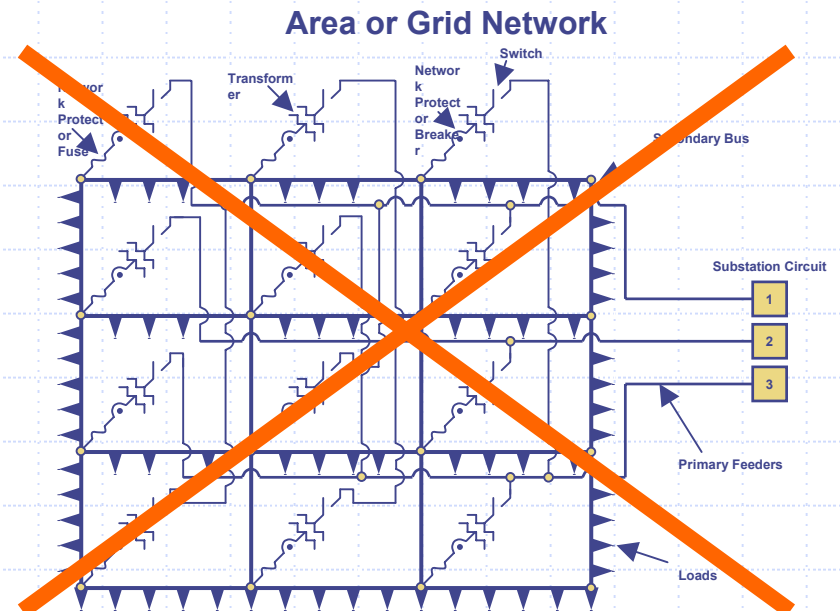
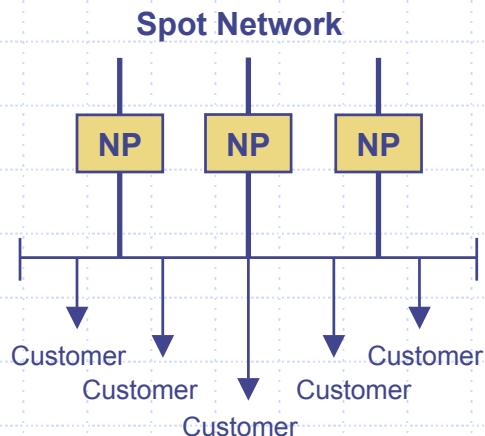
**Approval**

Information is approved (applicant's name)  
 Company Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_



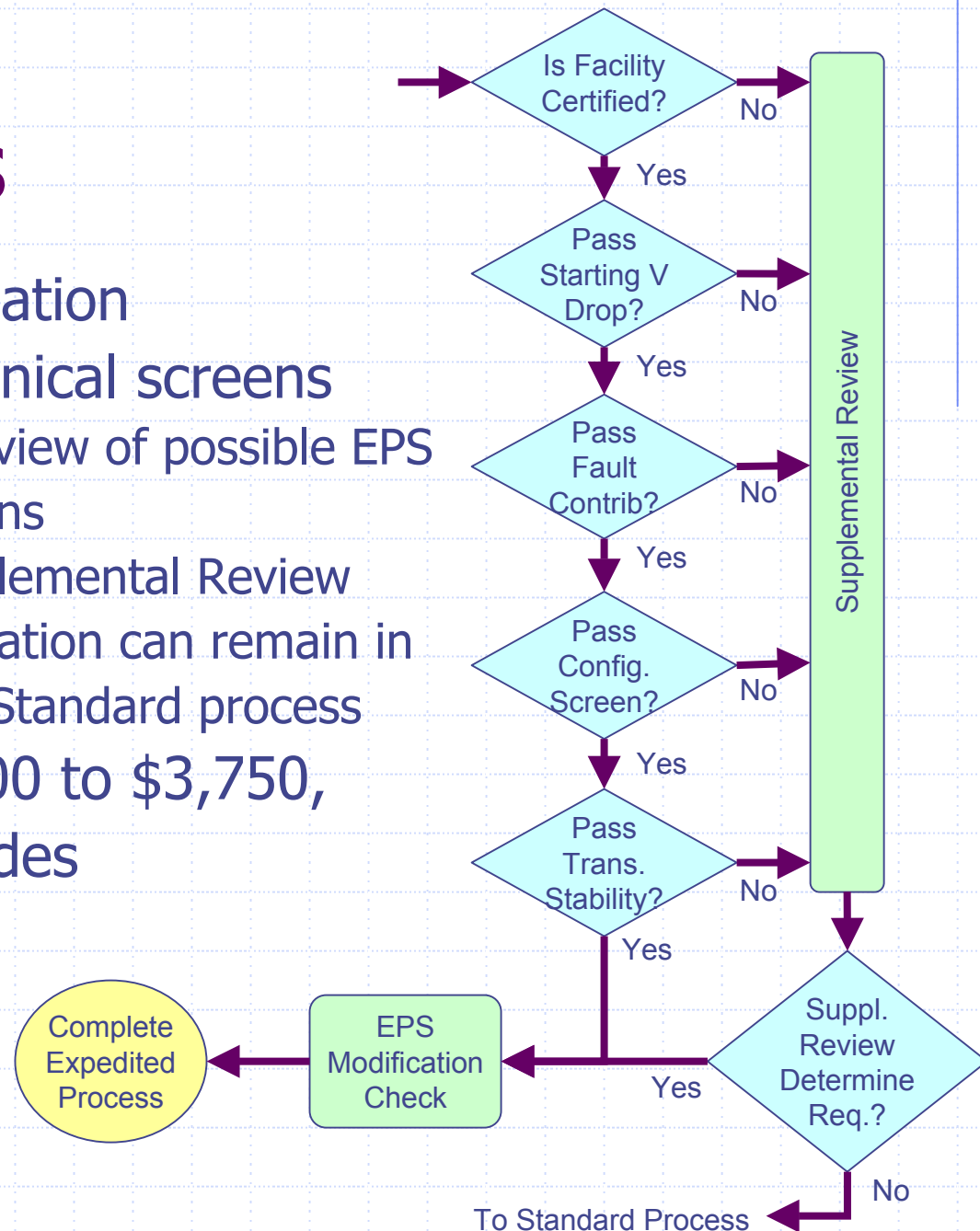
# Simplified Network Process

- ◆ One sheet application and approval
- ◆ Additional technical limits
  - Spot network only
  - Tighter capacity limit
- ◆ \$100 or \$300 fee
- ◆ 40 to 100 days max



# Expedited Radial Process

- ◆ Standardized application
- ◆ Five additional technical screens
  - If passed, only a review of possible EPS modifications remains
  - If not passed, Supplemental Review determines if application can remain in Expedited or go to Standard process
- ◆ Fee range from \$300 to \$3,750, possible EPS upgrades
- ◆ 40 or 60 days max



# Basis For Screens

- ◆ Circuit impact → Circuit size versus DG size
- ◆ Fault handling, fuse desensitizing & nuisance trip → DG contribution to fault
- ◆ Short circuit handling → Short circuit interrupting capability limit
- ◆ Proper connection → Three-wire and four-wire circuit criteria
- ◆ Single phase imbalance → Nameplate limits

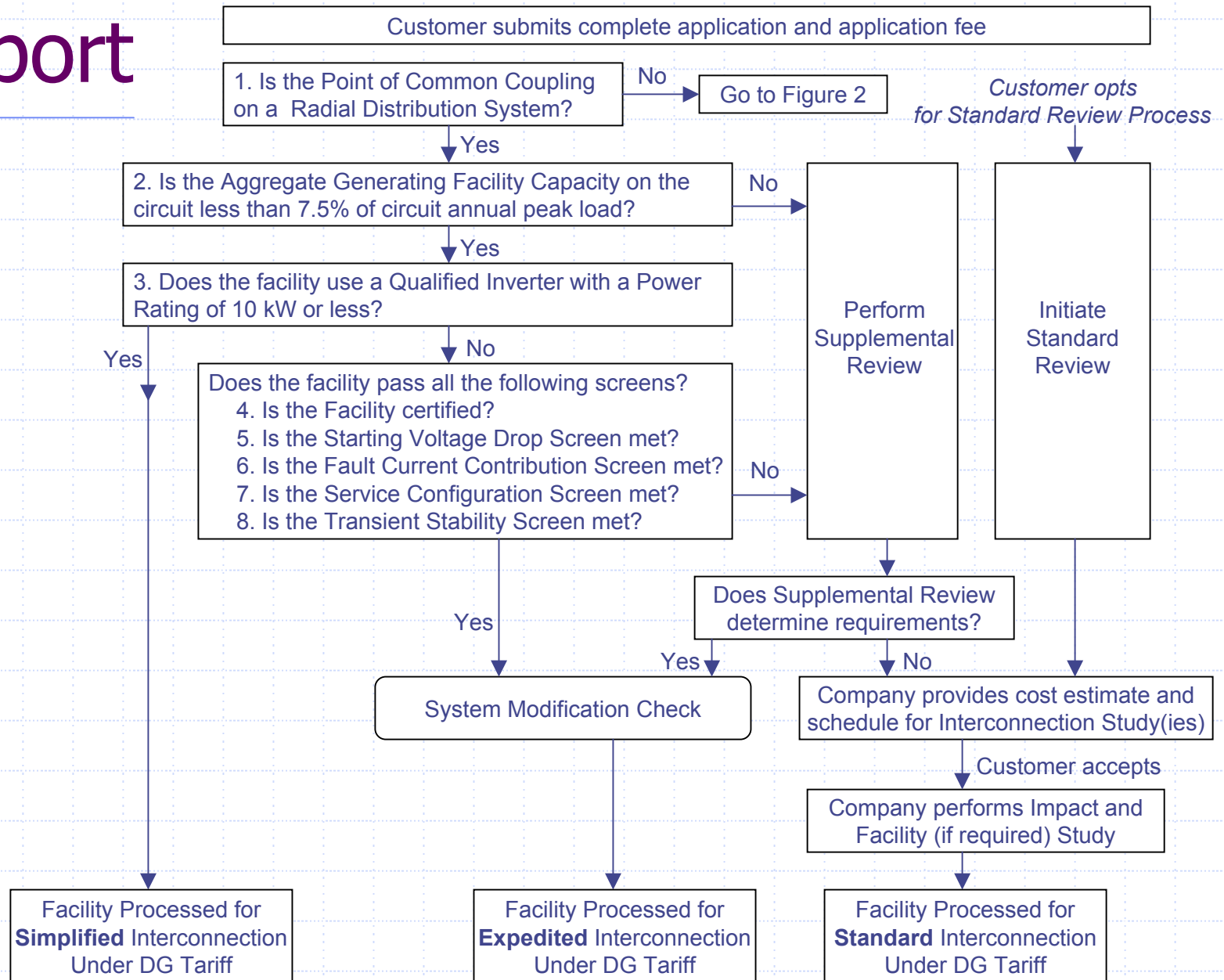
# Standard Review Process

- ◆ Standardized application
- ◆ Initial review
  - Initial review
  - Impact study if required
  - Facility study if required
- ◆ Fee range from \$300 to actual costs (no limit)
- ◆ 125 or 150 days max

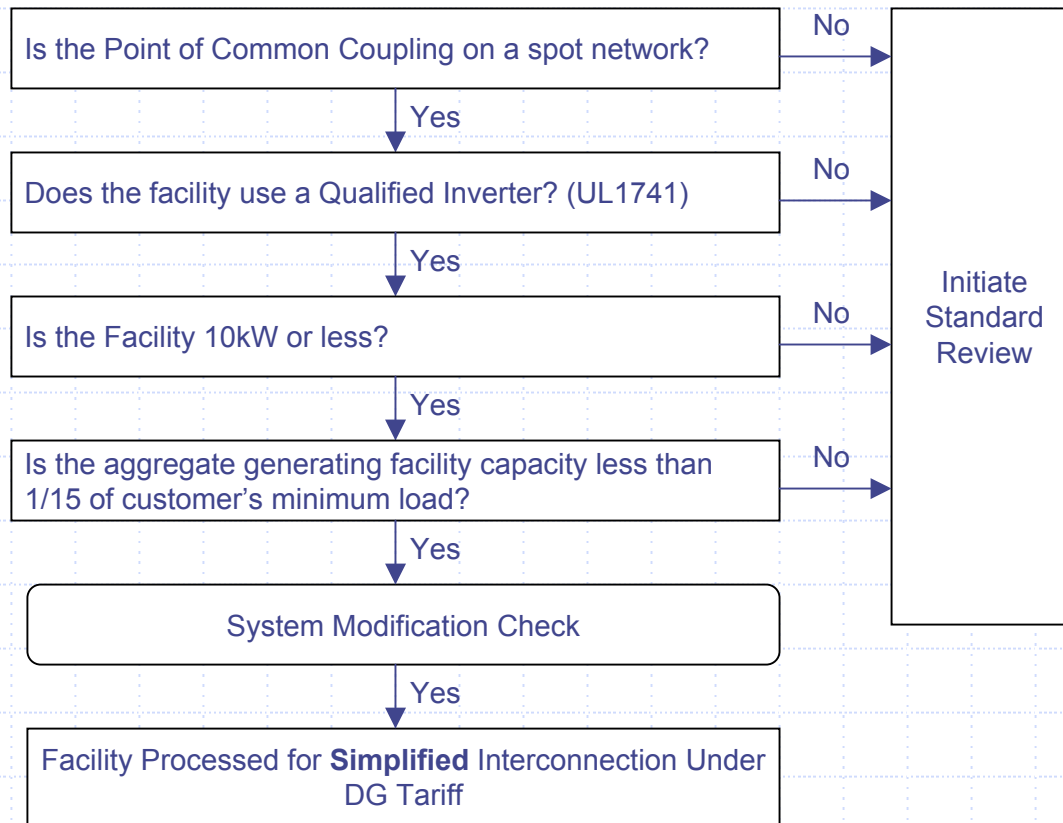
A standardized application form for a review process. It includes sections for 'Applicant Information', 'Project Description', 'Review Request', and 'Contact Information'. The form is designed to collect detailed information about the applicant and the project being reviewed.An initial review form that includes sections for 'Review Information', 'Review Findings', and 'Recommendations'. It is used to document the initial review of the application and provide feedback to the applicant.An impact study form that includes sections for 'Study Information', 'Study Findings', and 'Recommendations'. It is used to document the findings of an impact study conducted as part of the review process.A facility study form that includes sections for 'Study Information', 'Study Findings', and 'Recommendations'. It is used to document the findings of a facility study conducted as part of the review process.



# Process In Report



# Simplified Process For Networks



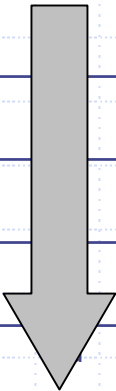
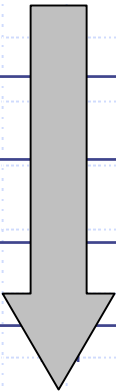
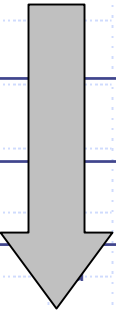
# IEEE Std1547

- ◆ Overview
- ◆ References
- ◆ Definitions and Acronymns
- ◆ Technical Specs and Requirements
  - General Requirements
  - Response to Area EPS Abnormal Conditions
  - Power Quality
  - Islanding
- ◆ Test Specifications and Requirements
  - Interconnection Test
  - Production Tests
  - Interconnection Installation Evaluation
  - Commissioning Tests
  - Periodic Interconnection Tests
- ◆ Annexes (Informative)
  - Flicker Information
  - Interconnection Tests
  - Commissioning Tests
  - Bibliography

# Fee Schedules

	Qualified Inverter ≤ 10 kW	Qualified DG	Any DG	Qualified Inverter ≤ 10 kW
	Simplified	Expedited	Standard Review	Simplified Spot Network
<b>Application Fee (covers screens)</b>	0	\$3/kW, minimum \$300, maximum \$2,500	\$3/kW, minimum \$300, maximum \$2,500	≤ 3kW \$100, > 3kW \$300
<b>Supplemental Review or Additional Review (if applicable)</b>	N/a	Up to 10 engineering hours at \$125/hr (\$1,250 maximum)	N/a	N/a
<b>Standard Interconnection Initial Review</b>	N/a	N/a	Included in application fee (if applicable)	N/a
<b>Impact and Facility Study (if required)</b>	N/a	N/a	Actual cost	N/a
<b>Facility Upgrades</b>	N/a	Actual cost	Actual cost	N/a
<b>O and M</b>	N/a	TBD	TBD	N/a
<b>Witness Test</b>	0	Actual cost, up to \$300 + travel time	Actual cost	0

# Time Frames

	Qualified Inverter ≤ 10 kW	Qualified DG	Any DG	Qualified Inverter ≤ 10 kW
	Simplified	Expedited	Standard Review	Simplified Spot Network
<b>Acknowledge Receipt of Application</b>	(3 days)	(3 days)	(3 days)	(3 days)
<b>Review Application for Completeness</b>	10 days	10 days	10 days	10 days
<b>Complete Review of All Screens</b>	10 days	25 days	N/a	Site review 30/90 days
<b>Complete Supplemental Review (if needed)</b>		20 days	N/a	
<b>Complete Standard Process Initial Review</b>			20 days	
<b>Send Follow-on Studies Cost/Agreement</b>			5 days	
<b>Complete Impact Study (if needed)</b>			55 days	
<b>Complete Facility Study (if needed)</b>			30 days	
<b>Send Executable Agreement</b>	Done	10 days	15 days	Done
<b>Total Maximum Days</b>	15 days	40/60 days	125/150 days	40/100 days
<b>Notice/ Witness Test</b>	<1 day with 10 day notice or by mutual agreement	1-2 days with 10 day notice or by mutual agreement	By mutual agreement	1 day with 10 day notice or by mutual agreement